

ZCT-CX05-RC01

Inclinometer Specification



General description

ZCT-CX05-RC01 inclinometer system is designed and produced by ZC Tech. It is with measuring range of $\pm 20^{\circ}$, and made of sensor and display. It is with zero set, alarm angle set function, and the built-in clock chip realize the system log function which can be set and read by the connection PC and USB interface.It can be used as safety monitoring record for construction machines.

Technical Parameters

	Parameter	Testcondition	Min.	Typ.	Max.	Unit
Operation parameter	Powersupply		8	24	36	V (DC)
	Quiescent current ⁽¹⁾	No loadVCC=24V		60	100	mA
	Alarm current	VCC=24V		150	200	mA
	Alarm angle	Relayactionpoint	2.0	7	9.9	°
	Relaycontact capacity	24V(DC)/250V(AC)			10	A
		NO				
		24V(DC)/250V(AC)			5	A
Specification parameter	Worktemprange	display	-20		+70	°C
		sensor	-40		+85	°C
	Measuringrange	1-axis	-20		+20	°
	Resolution			0.1		°
	Accuracy ⁽²⁾	RMS			± 0.2	°
	Zerotempdrift			± 0.05	± 0.08	° / °C
	Size	Display		160*105*32		mm
		sensor		41*41*51		mm
	IP	Display		IP54		
		sensor		IP67		

Features

Entirely industrial device;
Stable and reliable performance;
Automatically log function;
Wide power supply and power reversion protection.

Application

Engineering vehicle inclination measure and record,
Aerial lifts safety monitoring.
Dumper

Remark 1: Quiescent refers to work current when power supply is DC24Vol and sensor's angle is less than alarm angle.

Remark 2: accuracy refers to RMS value between actual angle and measuring angle (≥16 times) .

EMC (electromagnetic compatibility) measure and test

Circumstance phenomenon	Test grade	Unit	Test standard	Performance grade
Static electricity (contact discharge)	± 4(charging voltage)	KV	GB/T 17626.2 / IEC 61000-4-2	C
Static electricity (air discharge)	± 4(charging voltage)	KV		
Fast transient pulses	± 2(charging voltage)	KV	GB/T 17626.4 / IEC 61000-4-4	C
	5/50	Tr/Th ns		
	5 (repeat frequency)	KHz		
Surge (line-earth)、 (line-line[positive and negative of power line]) ①	± 2(open voltage)	KV	GB/T 17626.5 / IEC 61000-4-5	C
	1.2/50	Tr/Th us		

User's manual

(1) Connect the display with PC by the USB interface, and run the software to set the following parameters:

1. System time, default is Beijing time and time can be detailed as seconds
2. Alarm angle, default is +-7°. Current angle and time will be saved when it reaches or be greater than the alarm angle
3. Sleep time, default is 10mins. The whole system will enter into sleep state, 10 mins after the sleep time is set or waking from last time sleep state
4. Set current angle as zero
5. Recover absolute angle
6. Read log
- 7.Clean log

(2) Log function

The following events will be saved in the system

1. Sensor enter into sleep state, event type: Sleep is showed by software
2. Sensor recover from sleep state, event type code: Wake is showed by software
- 3.The measured angle is reach or exceed set alarm angle, event type: Angle_Alarm is showed
4. Angle alarm is released(measured angle is less than the set alarm angle), event type Angle_Recover is showed
5. Detect limit alarm, event type: Limit_Alarm is showed by software
6. Release limit alarm, event type: Limit_Recover is showed by software
7. Sensor is not connect with display, event type:Break_Alarm is showed by software
8. Sensor recover connection with display, event type : Break_Recover is showed by software

If same type event is continually occurred, only start and end alarm time is recorded. And max records qty is 4000, when qty is exceeded, new events will cover the old events according to FIFO principle.

(3) Display's function

1. There is a built-in screen, at the half left screen, ANGLE is showed on the first row, real angle value is showed on the second row, and incline direction is showed on the third row
2. There are three type alarm events:angle alarm, open circuit alarm, limit alarm. If no alarm events, ANGLE will be showed; if all three alarms are happenned at one time, ALLAM will be showed. When two different alarms happen, following will be showed

Alarm type	Angle	Open circuit	Limit
Angle	AGALM	AGBRK	AGLMT
Open circuit	AGBRK	BREAK	BRLMT
Limit	AGLMT	BRLMT	LIMIT

3. Real angle is showed on the half second row, which is made of sign and numbers. Default: left inclination is with negative angle and right inclination is with positive angle

4. When inclination angle is less than 2° , three upward arrows is showed on the left bottom of the screen and beeper is not aloud. If inclination angle is in the range of 2° and the alarm angle, when in left inclination state, there is a left toward arrow and three upward arrows; when in right inclination state, there is a right inclination arrow and three upward arrows. The beeper sings in a higher frequency when the real angle close to alarm angle. If inclination angle is greater than the set alarm angle, when in left inclination state, two left toward arrows and three upward arrows will be showed; when is right inclination state, two right arrows and three upward arrows will be showed. At the same time, beeper is singing for a long time and Relay is on

5. Two built-in high capacity Relay is inside the display, corresponding OUTPUT1 and OUTPUT2. when inclination angle is greater than the alarm angle, common port and normal open port of the Relay are closed; when inclination angle is less than alarm angle, common port and normal close port of the Relay are closed, inclinometer alarm signal output OUTPUT1. When limit alarm is happened, common port and normal open is closed; when limit alarm is released, common port and normal close are closed, and limit alarm signal output OUTPUT2

6. On the right half of the screen, display content are:

Date and week info is showed on the first row; time is showed on the second row; alarm angle is showed on the third row; sleep time is showed on the fourth row

7. There are seven buttons on the display. Power on, \uparrow , \downarrow , \leftarrow , \rightarrow , SET, OK. Alarm angle and sleep time can be set by buttons. Long time press the power button to turn on or turn off the screen. First press SET button, can see the ANGLE become gray, then we can change the alarm angle's decimals by button \uparrow and \downarrow , change the alarm angle's units by \leftarrow and \rightarrow . When the required angle is set, press button OK to save. If not save and press SET again, then SLEEP will change gray and enter into sleep time setting state, and the alarm angle's set will not be saved. When enter into sleep time set state, press \leftarrow and \rightarrow to change sleep time's low digitals and press \leftarrow and \rightarrow to change sleep time's high digitals. When the required time is set, press OK to save. If not press OK and press SET again, will exit sleep time state and the set will not be saved. Third time press SET to exit set mode, and fourth time to press SET button to enter into alarm angle setting state, and so on

8. After setting the sleep time, and when the sensor enter into sleep time, the screen will be closed, at this time, display will not response inclination alarm, limit alarm and so on. Press the power button for 3seconds, the screen will light and exit the sleep state

Display's power wiring				
Color	Brown	Black	Gray	Yellow and Green
Function	8— 36V(DC)	GND	Limit switch in	Limit switch in

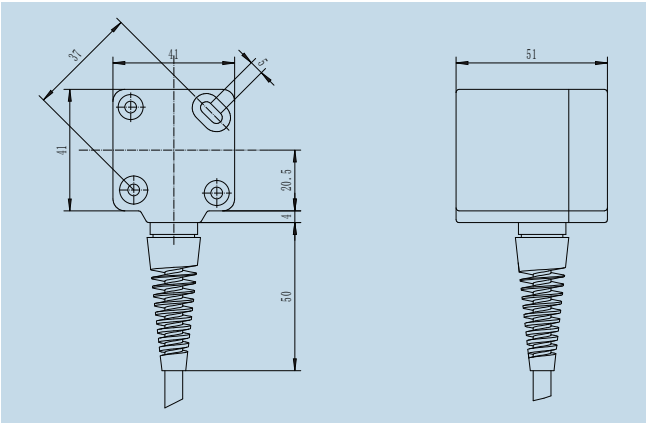
Relay wiring			
Color	Brown	Yellow and Green	Black
Function	NC port	Common port	NO port

It is not necessary to recognize wire colors for the sensor, when the connectors are matched, it is OK.

NOTICE:

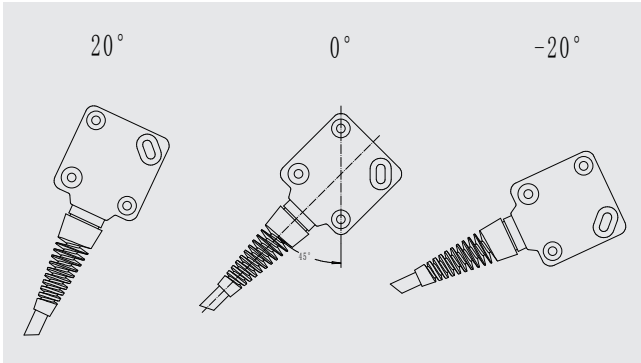
- 5
1. There are 4 wires of the power cable, that is brown wire, black wire, gray wire, yellow and green wire. Power + connect with brown wire, and Power- connect with black wire. Gray and yellow green wires are couple switch input signal(the couple wires are with two state: connection state and not connection state. If connection, display can detect and give alarm signal; if not connection, it is viewed as default normal state.) The two wires can't receive input, or the sensor will be damaged.

2. After the indicator is connected with the power, connect the indicator with PC by USB interface, then the log info can be read. USB interface is for data transmit and not for charge.

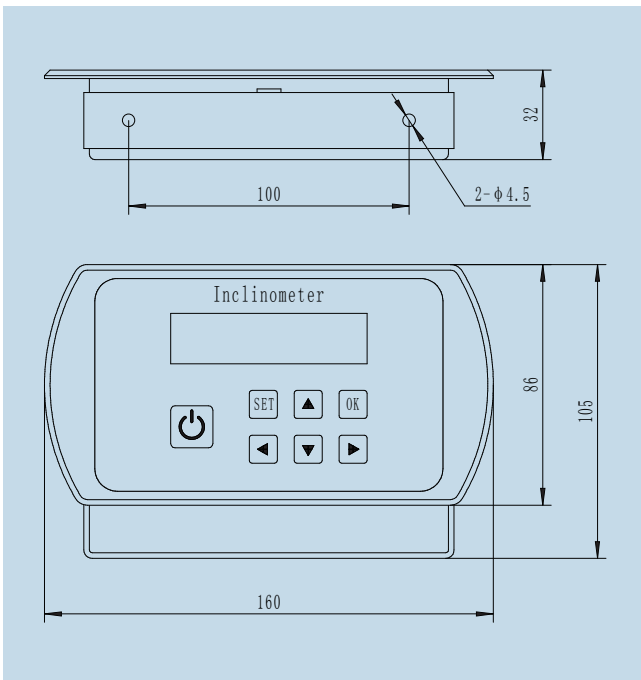


Size : (Unit: mm)

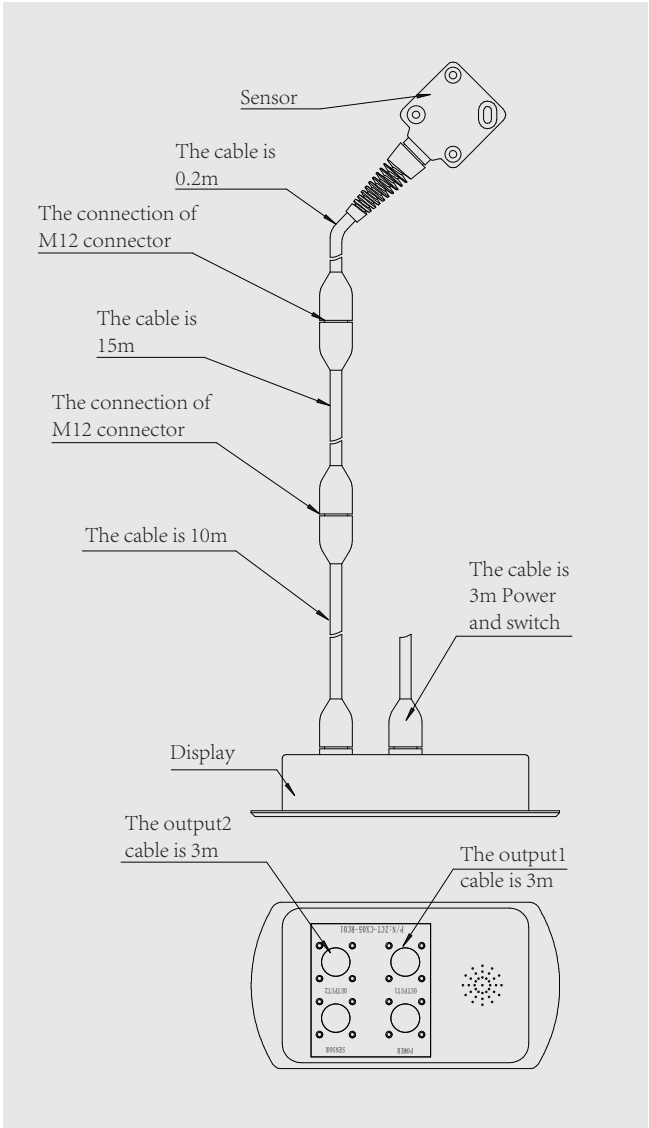
Sensor's Size



Sensor's installation diagram



Display's diagram



Connection diagram

Order info: ZCT-CX05-RC01

Guarantee Card

Product Name: Portable Inclinator
Part No.: ZCT-CX05-RC01
Data of purchasing: _____
Time limit of Guaranteeing: _____
Company Purchasing: _____
Product SN: _____

Record of mending:

- Report Time: _____
- Reasons of fault: _____
- Reporter: _____
- Results of mending: _____

Information of customer holding this Guarantee Card:

Note: This card is the basis for user enjoying maintaining and upgrades service.

Shanghai Zhichuan Electronic Tech Co., Ltd.

Address: 3/F Compositive Building, No.1128 Denghui RD,
Minhang Shanghai, China

0086-21-64908093 64908096 (T)

0086-21-64906992 (F)

Postcode:201109

<http://www.zc-sensor.com>

E-mail:sales@zc-sensor.com